a) Trp-R1-X7-R1-R1-R2-X-Phe-Phe-Tyr-X-Thr-Glu-X8-9-R3-R3-Arg-R4-X2-Trp

b) X3-Arg-X2-Pro-Lys-X3

c) X-Arg-X-Ile-X

d) X4-Phe-X3-Asp-X4-Tyr-Asp-X2

e) Tyr-X4-Gly-X2-Gln-Gly-X3-Ser-X8

f) X6-Asp-Asp-X-Leu-X3

wherein R1 is Leu or Ile; R2 is Gln or Arg; R3 is Phe or Tyr; ~~R4~~ R4 is Lys or His, and Xn represents the number n of consecutive unspecified amino ~~acid~~ acids; and wherein the protein has telomerase catalytic ~~activity~~ activity when complexed with a telomerase RNA component.

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120. The polynucleotide of claim 119, encoding a ~~protein~~ protein that comprises the structure Trp-Leu-X-Tyr-X2-h-h-X-h-h-X-p-Phe-Phe-Tyr-X-~~Thr~~-thr-Glu-X-p-X3-p-X3-Tyr-X-Arg-Lys-X2-Trp; wherein h is a hydrophobic amino ~~acid~~ acid selected from Ala, Leu, Ile, Val, Pro, Phe, Trp, and Met; and p is a polar amino ~~acid~~ acid selected from Gly, Ser, Thr, Tyr, Cys, Asn and Gln.

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121. The polynucleotide of claim 119, where structure ~~f)~~ 1) further comprises Arg-Lys-X2-Trp-X2-Leu.

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122. The polynucleotide of claim 119, where structure b) ~~comprises~~ comprises h-Arg-h-X-Pro-Lys, wherein h is a hydrophobic amino acid selected from ~~Ala~~ Ala, Leu, Ile, Val, Pro, Phe, Trp, and Met.

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123. The polynucleotide of claim 119, where structure c) ~~comprises~~ comprises Arg-X-Ile-Pro-Lys.

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